

***ECPHL* ERIE COUNTY**
PUBLIC HEALTH LABORATORIES

SPECIMEN COLLECTION
and
TRANSPORT MANUAL



***ECPHL* ERIE COUNTY**
PUBLIC HEALTH LABORATORIES
CLINICAL CENTER BUILDING AA
462 GRIDER STREET
BUFFALO, NY 14215
TEL: (716) 898-6100
FAX: (716) 898-6110

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***ECPHL* ERIE COUNTY**
PUBLIC HEALTH LABORATORIES

INTRODUCTION

This Specimen Collection and Transport Manual highlights the laboratory procedures and services provided by the Erie County Public Health Laboratory (ECPHL). The ECPHL offers a wide range of public health and environmental laboratory services. This manual was designed to supply our clients with the required information for submission of specimens for testing.

The ECPHL has provided laboratory services to the Western New York community for over six decades. Our goal is to provide each organization with the best public health and environmental laboratory services available. Our desire to provide quality is reflected in our organization's Mission Statement:

Erie County Public Health Laboratories Mission Statement

***“To provide proficient, cost-effective laboratory services,
educational programs, method evaluations,
epidemiological support and scientific study resources
to the health care, laboratory, environmental sciences,
government and private communities
of Western New York.*”**

***October 24, 1997
Buffalo, NY***

We appreciate your desire to select the ECPHL as a provider of quality, public health diagnostic services.

***ECPHL* ERIE COUNTY
PUBLIC HEALTH LABORATORIES**

LICENSES

Clinical Laboratory Improvement Amendments of 1988 (CLIA '88)

33D0654777 – Buffalo, NY

New York State Department of Health

Clinical Laboratory Evaluation Program (CLEP)
PFI: 1980 #: 1401A100

Environmental Laboratory Approval Program (ELAP)
#: 10472

Quality Control/Proficiency Testing Programs

New York State Department of Health
Wisconsin State Laboratory of Hygiene
Centers for Disease Control and Prevention (CDC)

Federal I.D. Number

16-6002558

Medicaid

Provider Number: 00623767

GENERAL INFORMATION

SPECIMEN CONTAINERS

Specimens collected for laboratory analysis must be properly placed in appropriate containers for transport to the laboratory (see *Blood Collection Tube Requirements* and *Specimen Collection and Transport Table*). Specimen containers must contain the recommended specimen volume for processing.

Specimen containers must be properly and legibly labeled with the patient's name, date of birth, and sample source. The name/source on the specimen/sample container must be consistent with the patient name and source on the *Laboratory Requisition Form*. Laboratory orders and specimen/sample containers that do not match are considered **Unsatisfactory** and will be discarded. Hardcopy reports will be issued on all unsatisfactory specimens.

LABORATORY REQUISITION FORM

All laboratory tests must be ordered using an authorized *ECPHL Laboratory Requisition Form*. Patient demographics, insurance information, specimen and laboratory orders **must be complete**. Incomplete data will delay testing.

SPECIMEN TRANSPORT

Specimens should be delivered to the ECPHL as soon as possible. Proper transport conditions must be maintained during transport to the laboratory. Please consult with ECPHL staff regarding questions related to transport.

All ECPHL Laboratory specimens must be delivered to the main laboratory located on the campus of the Erie County Medical Center (see map next page). Specimens should be delivered directly to the **Central Receiving Laboratory**.

ECPHL **ERIE COUNTY**
PUBLIC HEALTH LABORATORIES

Clinical Center Building AA

462 Grider Street

Buffalo, New York 14215

Tel: (716) 898-6100

Fax: (716) 898-6110

Hours of Operation

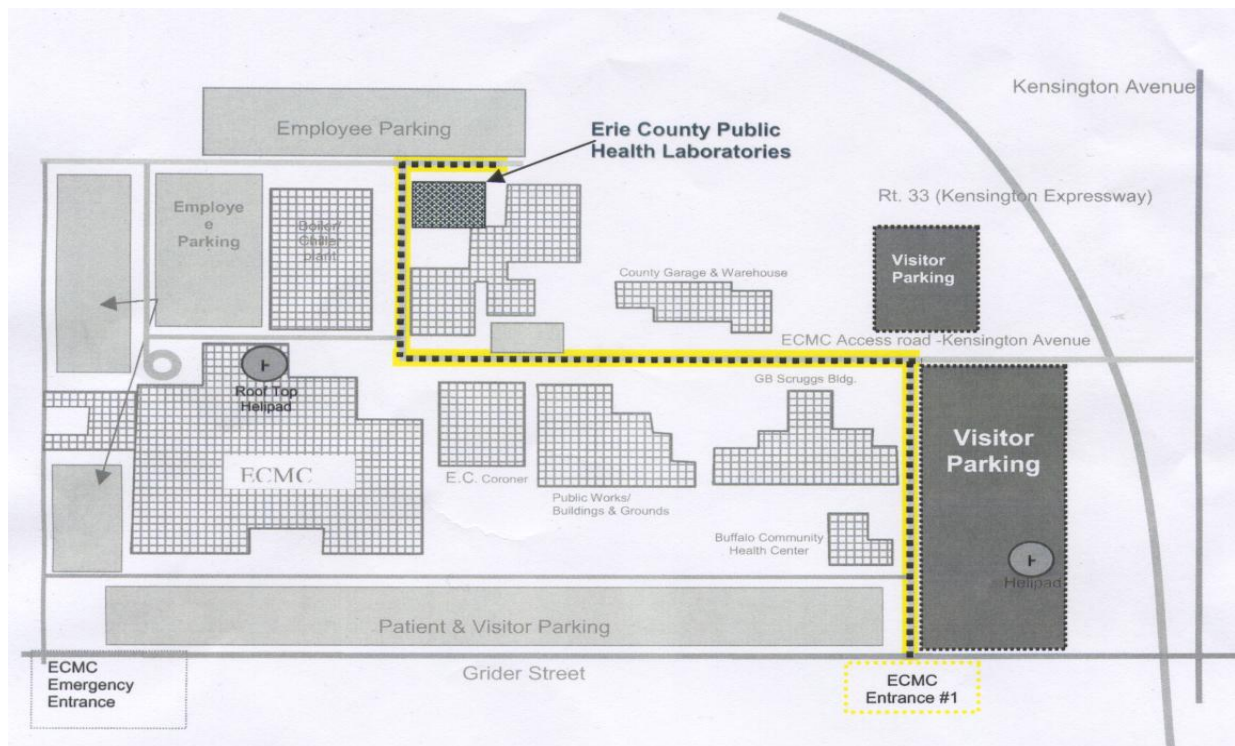
Monday – Friday 8:30am to 4:30pm

In the event of an emergency, call (716) 898-4225

(MERS-Medical Emergency Radio System)

Directions from NYS Thruway (I-90):

- Exit NYS Thruway at exit 51W to Route 33W (Kensington Expressway) towards downtown Buffalo.
- Proceed on Route 33W to Grider Street exit.
- Exit Route 33W and proceed through one (1) stop sign to Grider Street.
- Turn left on Grider Street and proceed through one (1) traffic signal to the Erie County Medical Center campus.
- Enter ECMC campus by turning right into the first entrance on Grider Street.
- Use the map below and follow signage to the Erie County Public Health Laboratories.



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(MERS-Medical Emergency Radio System)

Departmental Contacts

ADMINISTRATION

	<u>TELEPHONE</u>	<u>LOCATION</u>
Director: Scott J. Zimmerman, Dr. P.H.	(716) 898-6105	AA15
Laboratory Information Systems Jeanne Kabacinski	(716) 898-6105	AA18
Laboratory Response Network Michael Simkins, BS, MLT(ASCP)	(716) 898-6102	AA19
Billing	(716) 898-6100	AA19

PUBLIC HEALTH MICROBIOLOGY LABORATORY

	<u>TELEPHONE</u>	<u>LOCATION</u>
Main Laboratory	(716) 898-6116	AA11
Laboratory Supervisors: Linda A. Garringer, BS, MT(ASCP)	(716) 898-6117	AA14
Maggie Ventura, BS, MT(ASCP)	(716) 898-3192	AA11

ENVIRONMENTAL HEALTH LABORATORY

	<u>TELEPHONE</u>	<u>LOCATION</u>
Main Laboratory	(716) 898-6120	AA21
Laboratory Supervisor: Gerhard Paluca, B.A.	(716) 898-6118	AA23

EMERGING INFECTIONS/BIODEFENSE LABORATORY

	<u>TELEPHONE</u>	<u>LOCATION</u>
Laboratory Supervisors:		
Linda A. Garringer, BS, MT(ASCP)	(716) 898-6117	AA14
Lynn Diviak, BS, MS.	(716) 898-4588	BB121
Laboratory Response Network		
Michael Simkins, BS, MLT(ASCP)	(716) 898-6102	AA19

CENTRAL SPECIMEN RECEIVING

	<u>TELEPHONE</u>	<u>LOCATION</u>
Main Laboratory	(716) 898-6111	AA6
Laboratory Supervisor:		
Jeanne Kabacinski	(716) 898-6106	AA18

***ECPHL* ERIE COUNTY**
PUBLIC HEALTH LABORATORIES
Specimen Collection & Transport Guide
Blood Collection Tube Requirements

Note: Multiple tests (up to 8 tests per 10mL tube) require a FULL 10mL of whole blood.

TEST	Volume (whole blood)	SST (Serum Separator Tube)-no anticoagulant	Red Top (serum tube)-no anticoagulant	Green Top (contains Lithium Heparin)	Lavender Top (contains EDTA)	trace metal (contains Sodium Heparin)	Tan Top (contains Sodium Heparin)	Comments
Alkaline phosphatase	3 mL	XX	X				X	
ALT (SGPT)	3 mL	XX	X		X		X	
AST (SGOT)	3 mL	XX	X				X	
Bilirubin, Total	3 mL	XX	X				X	
BUN (urea)	3 mL	XX	X				X	
Cholesterol, Total	3 mL	XX	X				X	
FEP (Free erythrocyte protoporphyrin)	6 mL			X	X	XX	XX	fingerstick requires at least 250 ul
Gamma Glutamyl Transpeptidase (GGT)	3 mL	XX	X		X		X	
Glucose	3 mL	XX	X		X		X	
Hematocrit	5 mL			X	X	XX	XX	HCT capillary tube OK
Hepatitis A Ab (IgM)	5 mL	XX	X					
Hepatitis B Core Ab	3 mL	XX	X					
Hepatitis B Surface Ab	3 mL	XX	X					
Hepatitis B Surface Ag	3 mL	XX	X					
Hepatitis C Ab	3 mL	XX	X					
HIV-1 Ab	3 mL	XX	X					requires HIV Certification Signature
Lead, blood	6 mL			X	X	XX	XX	
Protein, Total	3 mL	XX	X				X	
Rubella Ab	3 mL	XX	X					
Sickle Cell Screen (Hgb electrophoresis)	3 mL				XX			filter paper spot OK
Syphilis Screen (RPR)	5 mL	XX	X					
Syphilis Confirm ONLY	5 mL	XX	X					
Uric Acid	3 mL	XX	X				X	
VDRL (CSF only)	0.5 mL							requires CSF Collection tube

ECPHL **ERIE COUNTY**
PUBLIC HEALTH LABORATORIES
PUBLIC HEALTH TESTING

Note: Multiple tests (up to 8 tests per 10mL tube) require a FULL 10mL of whole blood.

PUBLIC HEALTH TEST INFORMATION	SPECIMEN /SITE	COLLECTION	TRANSPORT	STORAGE	METHOD	TURN AROUND TIME
Alkaline Phosphatase (Alk Phos)	3 ml whole blood; see BCTR*	Serum; whole blood without anticoagulants; lab req.	As soon as possible (ASAP)	Refrigerate	Photometric	24 hrs.
ALT (SGPT)	3 ml whole blood; see BCTR*	Serum; whole blood without anticoagulants; lab req.	ASAP	Refrigerate	Photometric	24 hrs.
AST (SGOT)	3 ml whole blood; see BCTR*	Serum; whole blood without anticoagulants; lab req.	ASAP	Refrigerate	Photometric	24 hrs.
Autoclave monitoring (see Sterility test, biological indicator)						
Bilirubin, Total (TBil)	3 ml whole blood; see BCTR*	Serum; whole blood without anticoagulants; lab req.	ASAP	Refrigerate	Photometric	24 hrs.
BUN, (urea)	3 ml whole blood; see BCTR*	Serum; whole blood without anticoagulants; lab req.	ASAP	Refrigerate	Photometric	24 hrs.
<i>Chlamydia trachomatis</i> (see NAAT: Ct & GC)						
Cholesterol, Total	3 ml whole blood; see BCTR*	Serum; whole blood without anticoagulants; lab req.	ASAP	Refrigerate	Photometric	24 hrs.
Culture – Feces (Enteric)	Feces	Sterile Cont. w/Transport Medium (Contact Lab)	Within 3 days	Refrigerate	Culture for: Campylobacter, E. coli O157, Salmonella, Shigella, Vibrio, Yersinia	2-5 days
Culture- Food (Enteric)	Contact laboratory					
Culture-GC (see <i>Neisseria gonorrhoeae</i> culture)						
Culture-Group B Strep (see Group B Strep culture)						

PUBLIC HEALTH TEST INFORMATION	SPECIMEN /SITE	COLLECTION	TRANSPORT	STORAGE	METHOD	TURN AROUND TIME
Culture-Urine (see Urine culture)						
FEP (Free Erythrocyte Protoporphyrin)-- MUST ALSO ORDER BLOOD LEAD	Venipuncture or fingerstick; see BCTR*	Tan-top or dk.blue top tube w. Sodium Heparin, fingerstick (microvette) w. 250 uL whole blood	ASAP	Refrigerate	Fluorometry	3-4 days
GGT (Gamma Glutamyl Transpeptidase)	3 ml whole blood; see BCTR*	Serum; whole blood without anticoagulants; lab req.	ASAP	Refrigerate	Photometric	24 hrs.
Glucose	3 ml whole blood; see BCTR*	Serum; whole blood without anticoagulants; lab req.	ASAP	Refrigerate	Photometric	24 hrs.
Group B strep, culture	Vaginal or anal swab ONLY!	Culturette swab (orange top); manufacturer's instructions; lab req.	Within 96 hrs. of collection.	Room temperature-- DO NOT REFRIGERATE!	Culture; Biochemical identification; Latex agglutination	24-48 hrs.
HCG, urine	Urine sample; (first morning specimen preferred)	Clean, dry container with leakproof lid; lab req.	ASAP; Refrigerated-- within 72 hrs. of collection	Refrigerate	Monoclonal antibody	1 hour
Hematocrit	5 ml whole blood or capillary tube; see BCTR*	Tan-top or dk.blue top tube w. Sodium Heparin	ASAP	Refrigerate	Manual, spun	48 hours
Hemoglobin Electrophoresis (see Sick Cell screen)						
Hepatitis A Ab (IgM)	5 ml whole blood; see BCTR*	Serum; whole blood without anticoagulants; lab req	ASAP	Refrigerate	EIA	2-14 days (batched)
Hepatitis B (Core Ab only)	3 ml whole blood; see BCTR*	Serum; whole blood without anticoagulants; lab req.	ASAP	Refrigerate	EIA	1-3 days
Hepatitis B (surface ANTIBODY only) (HBsAb)	3 ml whole blood; see BCTR*	Serum; whole blood without anticoagulants; lab req.	ASAP	Refrigerate	EIA	1-3 days
Hepatitis B (surface ANTIGEN only) (HBsAg)	3 ml whole blood; see BCTR*	Serum; whole blood without anticoagulants; lab req.	ASAP	Refrigerate	EIA	1-3 days
Hepatitis C Ab	3 ml whole blood; see BCTR*	Serum; whole blood without anticoagulants; lab req.	ASAP	Refrigerate	EIA	1-3 days
HIV-1 Antibody, oral fluid	Oral transudate	ORASURE kit from ECPHL; manufacturer's instructions;	Within 14 days of collection	Refrigerate	EIA (NYSHD Albany confirm)	1-7 days (batched)

PUBLIC HEALTH TEST INFORMATION	SPECIMEN /SITE	COLLECTION	TRANSPORT	STORAGE	METHOD	TURN AROUND TIME
HIV-1 Antibody, serum	3 ml whole blood; see BCTR*	Serum; whole blood without anticoagulants;	ASAP	Refrigerate	EIA (ECMC confirm)	1-7 days (batched)
Lead, blood	Venipuncture or fingerstick; see BCTR*	Tan-top or dk.blue top tube w. Sodium Heparin, fingerstick (microvette) w. 250 uL whole blood	ASAP	Refrigerate	Graphite furnace atomic absorption spectrophotometry	3-4 days
Lead, urine	Urine	8 hr. sample (preferred) or random urine collected in a brown acid-washed bottle; lab req.	ASAP	Refrigerate	Graphite furnace atomic absorption spectrophotometry	3-4 days
NAAT: Ct & GC (Nucleic Acid Amplification, <i>Chlamydia trachomatis</i> and <i>Neisseria gonorrhoeae</i>)	Cervical	ECPHL kit: NAAT: Ct & GC collection kit; manufacturer's instructions; lab req.	Within 48 hours of collection	Refrigerate until sent to ECPHL	Strand displacement (nucleic acid amplification)	2-5 days (batched)
NAAT: Ct & GC	urethral swab	ECPHL kit: NAAT: Ct & GC collection kit; manufacturer's instructions; lab req.	Within 48 hours of collection	Refrigerate until sent to ECPHL	Strand displacement (nucleic acid amplification)	2-5 days (batched)
NAAT: Ct & GC	Urine	Sterile leak-proof container (10-50 mL); first void; lab req.	Within 4 days of collection	Refrigerate until sent to ECPHL	Strand displacement (nucleic acid amplification)	2-5 days (batched)
<i>Neisseria gonorrhoeae</i> (see NAAT: Ct & GC; culture and smear below)						
<i>Neisseria gonorrhoeae</i>, culture (GC culture)	Urethral, cervical, vaginal, rectal, throat	JEMBEC culture plate, car-bon dioxide pellet, plastic bag, manufacturer's instructions; lab req. (For ECSTD clinics only: modified Thayer-Martin culture plate.)	At room temp in plastic bag; must be received within 96 hrs. of collection. (For ECSTD clinics only: plates taped closed, in transport carrier.)	Room temp or incubate at 35°C. DO NOT REFRIGERATE! Incubate at 35°C. DO NOT REFRIGERATE!	Culture; Biochemical confirmation; DNA probe	No growth -- 48 hrs; Growth-- 72-96 hrs.

PUBLIC HEALTH TEST INFORMATION	SPECIMEN /SITE	COLLECTION	TRANSPORT	STORAGE	METHOD	TURN AROUND TIME
<i>Neisseria gonorrhoeae</i>, smear (GC smear)	Urethral, cervical, vaginal, eye	Exudate applied to glass slide with swab; lab req.	ASAP	Room temperature	Gram stain	0.5 hr.
Pregnancy test (see HCG)						
Protein, Total	3 ml whole blood; see BCTR*	Serum; whole blood without anticoagulants; lab req.	ASAP	Refrigerate	Photometric	24 hrs.
RPR (see Syphilis, screen)						
Rubella Antibody	3 ml whole blood; see BCTR*	Serum; whole blood without anticoagulants; lab req.	ASAP	Refrigerate	Latex agglutination	1-7 days (batched)
<i>Salmonella</i>, <i>Shigella</i> cultures (see Culture-Enteric)						
Sickle Cell screen (Hemoglobin Electrophoresis)	3 ml whole blood or blood spot filter paper; see BCTR*	Filter paper blood spots; lavender top tube with EDTA; lab req. /green Form L-7883595	ASAP; (Let filter paper spots dry before transporting)	Refrigerate	Hemoglobin electrophoresis	1-14 days (batched)
Sterility test, biological indicator	Autoclave (Identify by clinic and autoclave number)	ATTEST vial; manufacturer's instructions; lab req.	ASAP	Room temperature	Biological indicator	48 hrs.
Syphilis, screen (RPR)	0.5 ml serum; see BCTR*	Serum; whole blood without anticoagulants; lab req.	Refrigerated, (preferred); otherwise, room temperature	Refrigerate until sent to ECPHL	Latex agglutination	24 hours
Syphilis, confirmatory (FTA/ABS, TP-PA)	1.0 ml serum; see BCTR*	Serum; whole blood without anticoagulants; lab req.	Refrigerated, (preferred); otherwise, room temperature	Refrigerate until sent to ECPHL	Fluorescent microscopy; Particle agglutination	2-7 days (batched)
Syphilis, (VDRL) CSF ONLY	0.5 spinal fluid	Aseptic lumbar puncture; CSF collection tube; lab req	ASAP	Refrigerate until sent to ECPHL	Slide flocculation	2-7 days (batched)
<i>Treponema pallidum</i> (STD clinic only)	Genital ulcer	Exudate or fluid applied to glass slide	Immediately	NONE	Darkfield microscopy	0.5 hour
Urea (see BUN)						
Uric Acid	3 ml whole blood; see BCTR*	Serum; whole blood without anticoagulants; lab req.	ASAP	Refrigerate	Photometric	24 hrs.

PUBLIC HEALTH TEST INFORMATION	SPECIMEN /SITE	COLLECTION	TRANSPORT	STORAGE	METHOD	TURN AROUND TIME
Urinalysis (with microscopic exam)	Urine	leak-proof container; clean catch, mid- stream; lab req.	ASAP; Unre- frigerated, un- preserved-- within 2 hrs. of collection; Refrigerated, unpreserved-- within 24 hrs. of collection; Preserved-- within 48 hrs. of collection	Refrigerate	Dipstick chemistry; light microscopy	Same day
Urine (voided), culture	Urine	Sterile leak- proof container; clean catch, mid-stream; lab req.	ASAP: Unre- frigerated, un- preserved-- within 2 hrs. of collection; Refrigerated, un- preserved-- within 24 hrs. of collection; Preserved-- within 48 hrs. of collection.	Refrigerate	Culture; Bio- chemical identification; Antibiotic susceptibility.	No growth -- 24 hrs. Growth-- 2-5 days

***ECPHL* ERIE COUNTY**
PUBLIC HEALTH LABORATORIES
Specimen Collection & Transport Guide

Environmental Testing

*DW= Drinking Water *NPW=Non-Potable Water # - Time in Business days

ENVIROMENTAL TEST INFORMATION	SAMPLE	CONTAINER	TRANSPORT	METHOD	MAXIMUM HOLDING TIME	TURN AROUND TIME#
Alkalinity	<u>DW*</u> NPW*	Plastic, Glass (P) (G)	ALKALINITY bottle completely filled to the exclusion of air; refrigerate at 2-6°C.	Titrimetric	7 days	5 days
Aluminum	NPW*	P,G	METALS bottle pH <2 w. HNO ₃	Atomic absorption spectrometry (AAS)	6 months	10 days
Antimony	DW*	P,G	METALS bottle	AAS	14 days	10 days
Arsenic	<u>DW*</u> NPW*	<u>P,G</u> P,G	<u>METALS bottle</u> METALS bottle pH <2 w. HNO ₃	AAS	<u>14 days</u> 6 months	10 days
Barium	DW*	P,G	METALS bottle	AAS	14 days	10 days
Beryllium	DW*	P,G	METALS bottle	AAS	14 days	10 days
Biochemical oxygen demand (BOD)	NPW*	P,G	1/2 gal. bottle Cool at 2 - 6°C	Electrode	48 hours	5-day test- (must be scheduled)
Cadmium	<u>DW*</u> NPW*	<u>P,G</u> P,G	<u>METALS bottle</u> METALS bottle pH <2 w. HNO ₃	AAS	<u>14 days</u> 6 months	10 days
Calcium	NPW*	P,G	METALS bottle pH <2 w. HNO ₃	Titrimetric	6 months	10 days
Chemical oxygen demand (COD)	NPW*	P,G	1/2 gal bottle Cool at 2 - 6°C, pH <2 w. H ₂ SO ₄	Spectrophotometric- Hach 8000	28 days	5 days
Chloride	<u>DW*</u> NPW*	P,G	INORGANICS bottle No Preservative	Titrimetric	28 days	5 days
Chromium	<u>DW*</u> NPW*	<u>P,G</u> P,G	<u>METALS bottle</u> METALS bottle pH <2 w. HNO ₃	AAS	<u>14 days</u> 6 months	10 days
Coliform, fecal	NPW* (non- turbid)	Sterile P,G	Bottle containing sodium thiosulfate; cool at 2-6°C.	Membrane filter; quantitation	6 hours	24 hours
Coliform, fecal	NPW* (turbid)	Sterile P,G	Bottle containing sodium thiosulfate; cool at 2-6°C.	Most Probable Number (MPN)	6 hours	72 hours
Coliform, total /E. coli	DW*	Sterile P,G	Bottle containing sodium thiosulfate; cool at 2-6°C.	Chromogenic substrate (Colilert)	30 hours	18 - 24 hours

ENVIROMENTAL TEST INFORMATION	SAMPLE	CONTAINER	TRANSPORT	METHOD	MAXIMUM HOLDING TIME	TURN AROUND TIME#
Coliform, total /E. coli	DW* (Single Source-Retest)	Sterile P 500mL	Bottle containing sodium thiosulfate; cool at 2-6°C.	Chromogenic substrate (Colilert)	30 hours	18 - 24 hours
Coliform, total	NPW* (non-turbid)	Sterile P,G	Bottle containing sodium thiosulfate; cool at 2-6°C.	Membrane filter	6 hours	24 hours
Coliform, total SPC	Frozen des- sert	Sterile P,G	<u>Frozen (-4-0°C.)</u> Semi-frozen (0-4°C.)	Pour plate	36 hours	<u>24 hours</u> 48 hours
Color	<u>DW*</u> <u>NPW*</u>	P,G	INORGANICS bottle Cool at 2-6°C.	Visual comparison	24 hours	24 hours--- (must be scheduled)
Copper	<u>DW*</u> <u>NPW*</u>	<u>P,G</u> <u>P,G</u>	<u>METALS bottle</u> <u>METALS bottle</u> pH <2 w. HNO ₃	AAS	<u>14 days</u> 6 months	10 days
Cyanide	DW*	P,G	CYANIDE bottle Cool at 2-6°C., pH 12 w. NaOH	Cyanide selective electrode	14 days	5 days
Fluoride	<u>DW*</u> <u>NPW*</u>	P	INORGANICS bottle No Preservative	Ion selective electrode	28 days	5 days
Haloacetic Acid	DW*	G	40 mL Amber vial Cool at 2 - 6°C, NH ₄ Cl 100 mg/L	GC - ECD EPA 552.1	28 days	5 days
Hardness	NPW*	P,G	METALS bottle pH <2 w. HNO ₃	EDTA titrimetric	6 months	5 days
Hydrogen ion (see pH)						
Iron	<u>DW*</u> <u>NPW*</u>	<u>P,G</u> <u>P,G</u>	<u>METALS bottle</u> <u>METALS bottle</u> pH <2 w. HNO ₃	AAS	<u>14 days</u> 6 months	10 days
Lead	<u>DW*</u> <u>NPW*</u>	<u>P,G</u> <u>P,G</u>	<u>METALS bottle</u> <u>METALS bottle</u> pH <2 w. HNO ₃	AAS	<u>14 days</u> 6 months	10 days
Lead	Soil, dust, paint	P	Room temperature	AAS	None	10 days
Manganese	<u>DW*</u> <u>NPW*</u>	<u>P,G</u> <u>P,G</u>	<u>METALS bottle</u> <u>METALS bottle</u> pH <2 w. HNO ₃	AAS	<u>14 days</u> 6 months	10 days
Mercury	DW*	P	METALS bottle pH <2 w. HNO ₃	AAS	7 days	5 days
Mercury	DW*	G	METALS bottle pH <2 w. HNO ₃	AAS	14 days	10 days
Mercury	NPW*	P,G	METALS bottle pH <2 w. HNO ₃	AAS	14 days	10 days
Nickel	<u>DW*</u> <u>NPW*</u>	<u>P,G</u> <u>P,G</u>	<u>METALS bottle</u> <u>METALS bottle</u> pH <2 w. HNO ₃	AAS	<u>14 days</u> 6 months	10 days
Nitrate	DW* (chlorinated)	P,G	NITRATE bottle Cool at 2 - 6°C	Cadmium reduction Flow Injection	14 days	10 days

ENVIROMENTAL TEST INFORMATION	SAMPLE	CONTAINER	TRANSPORT	METHOD	MAXIMUM HOLDING TIME	TURN AROUND TIME#
Nitrate	DW* (non-chlorinated)	P,G	NITRATE bottle pH <2 w. H ₂ SO ₄	Cadmium reduction Flow Injection	28 days	10 days
Nitrate/nitrite	NPW*	P,G	NITRATE bottle Cool at 2 - 6°C, pH <2 w. H ₂ SO ₄	Cadmium reduction Flow Injection	28 days	10 days
Orthophosphate	<u>DW*</u> NPW*	P,G	INORGANICS bottle Cool at 2- 6°C.	Spectrophotometric	48 hours	24 hours
pH	DW*	P,G	No Preservation	Electrometric	1 hour	24 hrs.-- (must be scheduled)
Phosphorus DW* (see Orthophosphate)						
Residue, filterable (see Solids, settled)						
Residue, nonfilterable (see Solids, suspended)						
Residue, total (see Solids, total)						
Residue, total filterable (see Solids, total dissolved)						
Sands	Solids	P,G	Room temperature	Sifting	Not applicable	10 days
Selenium	<u>DW*</u> NPW*	<u>P,G</u> P,G	<u>METALS</u> bottle METALS bottle pH <2 w. HNO ₃	AAS	<u>14 days</u> 6 months	10 days
Silver	<u>DW*</u> NPW*	<u>P,G</u> P,G	<u>METALS</u> bottle METALS bottle pH <2 w. HNO ₃	AAS	<u>14 days</u> 6 months	10 days
Sodium	<u>DW*</u> NPW*	<u>P,G</u> P,G	<u>METALS</u> bottle METALS bottle pH <2 w. HNO ₃	AAS	<u>14 days</u> 6 months	10 days
Solids, settled	NPW*	P,G	INORGANICS bottle Cool at 2 – 6°C.	Imhoff Cone	7 days	3 days
Solids, sus- pended	NPW*	P,G	INORGANICS bottle Cool at 2 – 6°C.	Evaporation	7 days	3 days
Solids, total	NPW*	P,G	INORGANICS bottle Cool at 2 – 6°C.	Evaporation	7 days	3 days
Solids, total dissolved	<u>DW*</u> NPW*	P,G	INORGANICS bottle Cool at 2 – 6°C.	Evaporation	7 days	3 days
Standard Plate Count (SPC)	DW*	Sterile P,G	Bottle containing sodium thiosulfate; cool at 2-6°C.	Pour plate	30 hours	<u>48 hours</u> 72 hours - Bottled Water
Standard Plate Count (SPC)	NPW*	Sterile P,G	Bottle containing sodium thiosulfate; cool at 2-6°C.	Pour plate	6 hours	48 hours
Sulfate	<u>DW*</u> NPW*	P,G	INORGANICS bottle Cool at 2- 6°C.	Turbidimetric	28 days	5 days
Thallium	DW*	P,G	METALS bottle pH <2 w. HNO ₃	AAS	14 days	10 days

ENVIROMENTAL TEST INFORMATION	SAMPLE	CONTAINER	TRANSPORT	METHOD	MAXIMUM HOLDING TIME	TURN AROUND TIME#
Trihalomethanes	DW*		40 mL Amber vial containing sodium thiosulfate	GC / MS EPA 524.2	14 days	10 days
Turbidity	NPW*	P,G	INORGANICS bottle Cool at 2 - 6°C	Nephelometric	Not applicable	24 hrs.-- (must be scheduled)
Volatile Organics	DW*	G	40 mL Amber vial Cool at 2 - 6°C, pH <2 w. HCl and Ascorbic Acid 25 mg	GC / MS EPA 524.2	14 days	5 days
Zinc	<u>DW*</u> NPW*	<u>P,G</u> P,G	<u>METALS</u> bottle METALS bottle pH <2 w. HNO ₃	AAS	<u>14 days</u> 6 months	10 days

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REFERENCE RANGES

The reference range for each test is listed below. This range is the 95th percentile of results from a study of apparently healthy individuals. The number tested and the gender distribution varies according to each analyte and is listed in the manufacturer's Package Insert.

ANALYTE		REFERENCE RANGE
Alkaline Phosphatase	Male:	40–129 U/L
	Female:	35-104 U/L
ALT (alanine aminotransferase)	Male:	<41 U/L
	Female:	<31 U/L
AST (aspartate aminotransferase)	Male:	<37 U/L
	Female:	<31 U/L
Cholesterol		<200 mg/dL
FEP		0-34 mcg/dL
GGT (gamma glutamyltransferase)	Male:	8-61 U/L
	Female:	5-36 U/L
Glucose		70 – 105 mg/dL
Hematocrit, spun	Male:	40-54%
	Female:	37-47%
	Pediatric:	33-42%
Lead, blood		0-9 mcg/dL
Total Bilirubin		<1.0 mg/dL
Total Protein		6.4 – 8.3 g/dL
Urea Nitrogen (BUN)		6.0 – 20.0 mg/dL
Uric Acid	Male:	<7.0 mg/dL
	Female:	<5.7 mg/dL

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Critical Values

TEST NAME	Critical Low (= or <)	Alert Low (= or <)	Alert High (+or >)	Critical High (= or >)
AST (SGOT)			500 U/L	
ALT (SGPT)			500 U/L	
Bilirubin, Total			12.0 mg/dL	15 mg/dL (<2 mo)
BUN, Serum			60 mg/dL	
Creatinine, Serum			8 mg/dL	
Glucose (fasting)	45 mg/dL	50 mg/dL	300 mg/dL	475 mg/dL
Lead, Blood (Adult)			10 mcg/dL	20 mcg/dL
Lead, Blood (Pediatric)			10 mcg/dL	20 mcg/dL
Protein, Total Serum		4 gm/dL	10 gm/dL	

Critical Value: An abnormal patient test result that may be potentially life-threatening.

When a patient's test result occurs outside the normal range, the laboratory will:

- 1) Confirm the results by repeating and/or diluting
- 2) Telephone the results to the patient's physician.

Alert Value: A patient's test result approaching critical value.

The laboratory will notify the physician via hardcopy report.